

has been to describe a simple method which can be applied using a limited amount of equipment.

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## A NEW SUBSPECIES OF *EUMEDONIA EUMEDON* (LYCAENIDAE) FROM CAUCASUS

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During the past few seasons I have had the opportunity to collect in the Western part of the Main Caucasus Ridge and to review Caucasian material deposited in the Lepidoptera Collection of the Zoology Museum, Kiev State University and in the private collection of Dr. Eugene S. Miljanowski (Sukhumi, Georgia) who spent more than 30 years collecting in different parts of Abkhazia. From these sources I found some interesting, heretofore undescribed forms of lycaenid butterflies, one of which is described here with some brief remarks.

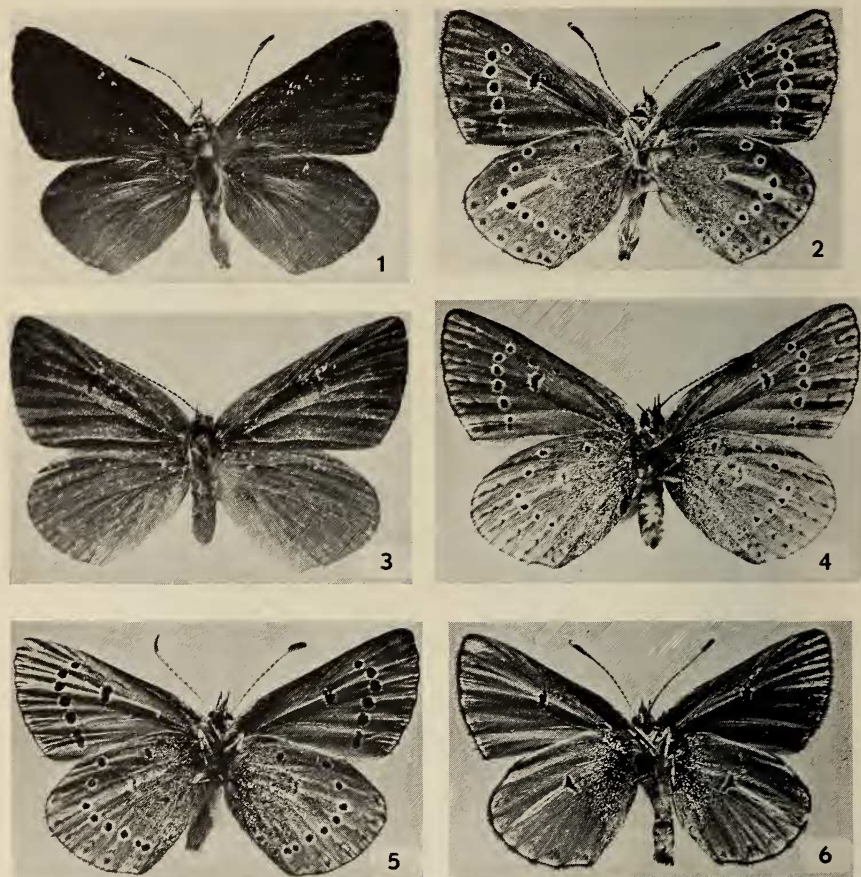
### *Eumedonia eumedon modestus* Nekrutenko, new subspecies (Figs. 1-6)

*Lycaena eumedon* Esp.: Romanoff, 1884, p. 52.

*Lycaena eumedon* Esp.: Wojtusiak & Niesiolowski, 1947, p. 58-59.

*Lycaena teberdina* Tschetv.: Miljanowski, 1964, p. 114.

**Male.** Length of the forewing (base to tip) of the holotype 14.0 mm (variation in type series 13.0 to 14.5 mm). Upperside of both wings of dark black-brown ground color, discal spots hardly recognizable. Underside ground color steel-grey,



Figs. 1-6. *Eumedonia eumedon modestus* n. subsp.: 1, 2, holotype, ♂, upper and undersides, S.W. Caucasus, Awadhara, 1800 m, 7-12 June 1971, Y. P. Nekrutenko; 3, 4, allotype, ♀, upper and under sides, same label data; 5, paratype, ♂, ab. *fulgia* Spangh., underside, same label data; 6, paratype, ♂, ab. *speveri* Husz., underside, same label data.

discal spot and series of postdiscal spots complete, surrounded with remarkable white rings. The white stripe on the underside of the hindwing is well developed, but is twice as narrow as that in European specimens. Blue powdered area on the underside of hindwing is relatively larger than in European specimens, and occupies about  $\frac{1}{3}$  of the entire wing surface. The main differential characteristic of the described subspecies is an extreme reduction of submarginal markings. Orange and black submarginal spots are almost absent on the underside of the forewing, and on the hindwing underside they are diffused, reduced and incomplete.

There are no essential differences from European specimens in the male genitalic armatures except for a deeper incision between valval lobes.

**Female.** Length of the forewing of allotype 15.5 mm (14.9-15.9 mm). In size



Fig. 7. *Eumedonia eumedon modestus* n. subsp., type locality. A meadow below upper timberline at an elevation of 1800–2000 m at Awadhara, S. W. Caucasus, surrounded by endemic fir-trees *Abies nordmanniana* (Stev.) Spach.

and outer appearance very similar to male. This weak sexual dimorphism may often be confusing, especially in the field. However, in some females (including allotype) upperside of hindwing bears a hardly recognizable brown spot within anal angle. Underside pattern is quite similar to that of a male.

**Types.** Holotype, male, and allotype, female, S. W. Caucasus, Abkhasian Autonomous Soviet Socialist Republic, Awadhara, 1800–2000 m, 7–12 June 1971, Y. Nekrutenko (In Zool. Mus. Kiev Univ.). Paratypes 8 ♂♂, 2 ♀♀, same locality, dates and collector (In Zool. Mus. Kiev Univ.). Nine paratypes from Awadhara, June, July 1961, 1968 and 1969 (in coll. E. Miljanowski). 5 ♂♂ paratypes, Teberda, N. W. Caucasus, Mt. Chatipara, 2200–2400 m, 30 July to 6 August 1933, L. Sheljuzhko (Zool. Mus. Kiev Univ.). ♂ paratype, Teberda, N. W. Caucasus, Valley of the Teberda River, L. Sheljuzhko (Zool. Mus. Kiev Univ.), ♀ paratype, Teberda, Mt. Chatipara, 2600 m, 30 July 1933 L. Sheljuzhko (Zool. Mus. Kiev Univ.). ♂ paratype, Lebarde, W. Georgia, 3 July 1962 (coll. E. Miljanowski). 2 ♂♂, paratypes, Lagodekhi Reservation 25 July and 2 August 1959 (coll. E. Miljanowski). 3 ♂♂ paratypes, Yelizavetpol (now Kirovabad), Azerbaijan, 20 and 26 June (no year), A. Kashtshenko (Zool. Mus. Kiev Univ.). ♂ paratype, Bakuriani, Mt. Kochta, 31 July 1932, B. Tkatschukov (Zool. Mus. Kiev Univ.).

**Type locality** (Fig. 7). Because most specimens examined were collected in Awadhara, it is designated as the type locality of the described subspecies. Awadhara is a part of Ritsa Nature Reservation (Ritsinskiy Zapovednik) and lies 16 km up along the Lashipse River from Lake Ritsa, at elevation 1650–2500 m. *E. eumedon modestus* flies in rich meadows below and above upper timber line. The flight period extends from early June to early October (Miljanowski, personal communication).

Subspecific characters given above are stable for all specimens of *E. eumedon* Esp. ever seen from the Caucasus range. N. M. Romanoff (1854) reported the occurrence of *Lycaena eumedon* from 8 points in Transcaucasia, including Bakuriani, "en général sur les lieux élevés en Juillet." A male specimen from this locality, included in the type series, showed the appearance of the described subspecies in Caucasus Minor also. Wojtusiak & Niesiolowski (1947), who reported the occurrence of *E. eumedon* in the Central Caucasus (Karaugom, 1800–2500 m), have noted its smaller size, as compared to European specimens, and the "underside of wings not brown but grey." *E. eumedon* has not been included in the faunistic list of E. Miljanowski (1964) as it has been confused with *Lycaena teberdina* Shel. The latter is highly local in its occurrence (Teberda, N. W. Caucasus) and seems not to occur on the Southern side of the Great Caucasus (Sheljuzhko, 1934).

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#### NOTES ON THE LIFE HISTORY OF *EUGONOBAPTA NIVOSARIA* (GEOMETRIDAE)

In spite of the abundance of *Eugonobapta nivosaria* Guenee in many localities in the northeastern United States and eastern Canada, there apparently has been no published account of the early stages.

Success in discovering these early stages came only after several failures to keep the eggs alive over winter. That problem was finally solved by confining the females in paper lined containers, and then, after the eggs were deposited on the paper, placing them in a wooden box which was stored in a sheltered place outdoors. This box, however, was covered with snow during much of the winter.